

NEWS BULLETIN

समाचार
पत्रिका



NEPAL GEOLOGICAL SOCIETY

नेपाल भौगर्भिक समाज

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Kathmandu

Nepal.

Nepal Geological Society

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1990--92

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EDITORIAL

Nepal Geological Society is pleased to bring this issue of News [Bulletin on the auspicious occasion of 41st anniversary of National Democracy Day of Nepal. The Society takes this opportunity to express its deep gratitude to the martyrs who sacrificed their lives for the restoration of Democracy during the people's democratic movement last year.

The Society feels that a stable democratic environment is necessary at all beurocratic and scientific level for an all round development of the country. Such an environment will open new vista with greater opportunities of strengthening and promoting the application of the fruits of sciences to national development. In this context, the Society has improved to modus operandi and set up several working groups (Sub-Committees) for further expanding its professional activities both in national and international levels. Therefore it urges its members and well wishers to extend greater cooperation and contribution towards acheiving the objectives of the Society.

In the year 1990, the Society gained cosiderable strength in its membership. More geologist, mining engineers and geotechnical engineers have been awarded the membership. The Society has 237 members as of December, 1990. It now presents a strong scientific community of geoscientists and geo-engineers, contributing much towards understanding the natural processes and phenomena in the Himalayas, ready to provide necessary advices to the government or other agencies in planning and evaluating the mineral potentials of the country, in mitigating the natural hazards as well as protecting the environment of the country.

Lastly, we extend our best wishes to all its readers for a happy and prosperous 1991.



Best Wishes and Hearty Felicitations

on the auspicious occasion of

41st Naional Democracy Day

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NGS News

1. The outgoing president of the society Dr. R. P. Bashyal resigned from the office on April 19, 1990. His resignation was accepted by the special meeting of the members held on May 4, 1990. The same meeting nominated Mr. U. M. Shakya, Vice President as the working President of the Society for the remaining term.
2. Dr. M. P. Sharma, member of the Society has been appointed the chairman of the Research centre for Applied Science and Technology (RECAST) on June 8, 1990 under Tribhuvan University, Kathmandu.
3. As per the constitution of NGS, the then Executive committee formed an Election Sub-committee under the chairmanship of Mr. Madhav Raj Pandey on July, 1990 to hold elections of the sixth Executive committee, which was to take office from Sept. 1, 1990. Kiran Raj Poudel, Sardesh Sharma and Vishnu Dongol were members of the sub-committee while Upendra Man Singh Pradhan served as its member secretary.
4. The Election Sub-committee held elections on August 24, 1990 for the posts of President, Vice President, Joint Secretary and Treasurer. The Secretary and two executive members were elected unopposed. There were two candidates for each of the contested posts. One hundred and forty nine members participated in the election. The results of the election were announced at 7 P. M. on the same day.
5. The new Executive committee headed by Mr. A. N. Bhandari held its first meeting on September 11, 1990. The meeting decided to constitute several sub-committees as a first step towards expanding the professional activities of the Society. These Sub-committees are the following:
 - Advisory Board
 - Financial Sub-committee
 - Scientific Sub-committee
 - National / International Relations Development Sub-committee

- Professional Development Sub-committee
- Rules and Regulations Sub-committee

6. The eleventh Annual General Body of the Nepal Geological Society met on September 14, 1990 in the auditorium of the Department of Mines and Geology in a cordial atmosphere. The outgoing Secretary and Treasurer of the Society presented their annual reports. The Secretary-elect outlined the general course of action to be taken by the new Executive committee. After this many members expressed their views and opinions and also made suggestions to the new Executive committee.

7. Dr. John A. Talent, senior Professor of Macquaire University, Sydney, Australia delivered lectures on the following two topics.
- a) Evolution of Asia from formerly discrete crustal blocks.
 - b) Around the world with Prof. V. J. Gupta.

These lectures were organised by the Society in the auditorium of DMG on October 7, 1990.

8. Mr. Yogendra Lall Singh, life member of the Society expired on Kartik 7, 2047 (October 24, 1990) at his residence following a brief illness. The Society on October 26, 1990 organised a condolence meeting on his sad and untimely demise. Mr. A. N. Bhandary, Mr. B. M. Pradhan,

Mr. G. S. Thapa, Mr. J. M. Tater and Mr. T. P. Adhikary highlighted on Mr. Singh's contribution to the society and to the institutional development of the Department of Mines and Geology the meeting observed one minute silence for the lasting peace of his departed soul. Condolence message to the bereaved family was conveyed through 'Gorakhapatra' the daily vernacular. The November 19, 1990 issue of the newspaper carried the message.

9. The third meeting of the Executive committee held on October 30, 1990 has nominated Dr. Pitamber Gautam and Mr. Ram Sharma Poudel as the members of the Executive committee in accordance with Article 12, Sub-article 4 (b) of the constitution of the Society. The same meeting has reorganised the Editorial Board and constituted the several other Sub-committees as mentioned in (5). Details of these Sub-committees are described under a separate article in this very issue of the Bulletin.

10. In November, 1990, Mr. T. P. Dhoubdel, life member of the Society participated in the one day relay hunger strike, organised by the adhoc committee of the employees of RONAST demanding the implementation of Dhoubdel's commission Report.

11. Mr. S. P. Singh, life member of the Nepal

Geological Society has been appointed the Director General of the Dept. of Mines and Geology, Kathmandu on Nov. 12, 1990.

12. The President of the Society, Mr. A. N. Bhandari has also been appointed as the Advisor to Law & Justice, Labour and social welfare as well as Tourism Ministry on November 28, 1990.

13. The first meeting of the newly formed Editorial Board, held on December 7, 1991, has decided to publish the next issue (volume 8) of the Journal of the Nepal Geological Society by June 1991. Scientific

papers on Himalayan Geology should reach the Managing Editor by March, 1991.

14. The fifth meeting of the Executive committee held on December 21, 1990 has decided to constitute NGS-IDNDR council in response to the call made by United Nations in 1987. The United Nations have declared 1990 decade of 1990-2000 A. D. as the International Decade of Natural Disaster Reduction (IDNDR) the newly constituted council will endeavour to assist the national - IDNDR committee in natural disaster reduction and mitigation programmes of the country.



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नेपाल भौगर्भिक समाजको एघारौं वार्षिक साधारण सभा

नेपाल भौगर्भिक समाजको सेप्टेम्बर १४, १९६० मा आयोजना गरिएको एघारौं वार्षिक साधारण सभामा पूर्व सचिव श्री रमेश कुमार अर्याल र पूर्व कोषाध्यक्ष श्री कृष्ण प्रसाद कापलेले प्रस्तुत गर्नु भएको प्रतिवेदनहरू तथा नवनिर्वाचित सचिव श्री तारा प्रसाद अधिकारी द्वारा प्रस्तुत मन्तव्यको साथै तत्पश्चात् सभामा भएको छलफल सम प्रस्तुत गरिएका छन् ।

(क) सचिवको प्रतिवेदन

सभापति महोदय तथा सदस्य साथीहरू,

नेपाल भौगर्भिक समाजको एघारौं साधारण सभामा यहाँ उपस्थित सर्व सदस्य साथीहरूलाई म हादिक स्वागत गर्दछु । सर्व प्रथम भर्खरै सम्पन्न भएको निर्वाचनबाट छोट्टो कार्यकालको लागि विभिन्न पदमा निर्वाचित नयाँ कार्यकारिणी समितिका सदस्य साथीहरूलाई हादिक वधाई ज्ञापन गर्दछु । सो निर्वाचन राम्ररी सम्पन्न गरी का. का. स. लाई मद्दत पुऱ्याउनु भएकोमा निर्वाचन उप-समितिका अध्यक्ष श्री माधव राज पाण्डे, सदस्य सचिव श्री उपेन्द्र मान सिंह प्रधान तथा सदस्यहरू किरण राज पौडेल, डा. श्री विष्णु डंगोल तथा ज्ञानदेश राज शर्मा लाई का. का. स. का तर्फबाट धन्यवाद ज्ञापन गर्दछु ।

आज यहाँहरू समक्ष बितेको दुई वर्षको कार्य.

कालमा समाजले गरेको विभिन्न गतिविधि बारे छोटो प्रतिवेदन पेश गर्न पाउँदा खुषि लागेको छ । ग्रहिले हाओ समाज स्थापना भएको ११ वर्ष पूरा भएको छ । समाजको सर्वोन्नतिको लागि छोटो ठहरिने यस अवधिमा हाओ समाजले जे जति गर्न सक्यो र गर्दैछ यसलाई सानो उपलब्धि भन्न सकिन्न । यसरी बितेका दुई वर्षमा समाजको विकास तथा यसलाई क्रियाशिल बनाउने विभिन्न कार्यहरू गरिएका भिए । यि मध्ये २०४५ साल भाद्र ५ गते पूर्वी नेपालको भूकम्प पिडीत क्षेत्रमा भौगर्भिक अध्ययनको लागि समाजले दुइ सदस्यहरू क्रमशः डा. दिव्य रत्न कंसाकार तथा डा. श्री तोरण शर्मालाई पठाएको थियो । यहाँहरूबाट प्राप्त तथ्याङ्कको आधारमा एउटा प्रवचनको आयोजना गरी तत् सम्बन्धि जानकारी समाजका सर्व उपस्थित साथीहरूलाई अवगत गराएको

धियो । उक्त कार्यमा संलग्न हुन भएका यस समा-
जका सदस्य द्वय डा. श्री विश्व रत्न केसाकार तथा डा.
श्री तोरण बर्मा लाई समाजको सम्पूर्ण सदस्यहरूको
तर्फबाट धन्यवाद ज्ञापन गर्दछु ।

स्थापनाकाल देखिनै समाजले राष्ट्रिय वा अन्तर-
राष्ट्रिय स्तरको भौगोलिक सेमिनार गराउने उद्देश्य
राखेको तर विभिन्न कारणले गर्दा उक्त कार्यहरू आयोज-
न गर्न नसकिँदा पनि यस समाजको दली कार्यिकीको
शुभ-उपलक्ष्यमा नेपाल हिमालयको भौगोलिक वनोट
संलग्न राष्ट्रिय स्तरको एक दिने गोष्ठी अगस्ट २५,
१९८६ मा आयोजना गरिएको थियो । उक्त गोष्ठीमा
यस समाजका तत्कालिन अध्यक्ष डा. श्री रमेश प्रसाद
बस्न्यालज्यूको सार्थक सर्वे सदस्यसाथीहरूको सक्रिय योगदान
रहेको थियो । म सबैलाई हादिक धन्यवाद ज्ञापन
गर्दछु । यस बाहेक उक्त कार्य सफलपूर्वक संपन्न गरा-
उन विभिन्न संघ संस्थाहरूले आर्थिक अनुदान उपलब्ध
गराई सहयोग गर्नु भएकोमा बधाईहरूलाई पनि हादिक
धन्यवाद ज्ञापन गर्दछु । उपरोक्त संघ संस्थाहरूको नामा-
वली यस समाजको बुलेटिन नं. ७ मा प्रकाशित भइ
सकेको छ ।

सदस्य साथीहरू हाम्रो समाज दित पर दिन
शक्य हुन गर्दैरहको आभास यस समाज प्रति सदस्यह-
रूको वढ्दो अभिरुचिले स्पष्ट पारेको छ । हाम्रो गत २
वर्षको कार्यकालमा समाजको सदस्य संख्या १८५ बाट
बढेर २३१ पुगेको छ । यही अवधिमा आजीवन सदस्य
संख्या १०६ बाट बढी १६४ पुगेको छ, जस मध्ये विदेशी
आजीवन सदस्य संख्या ५३ रहेको छ भने स्वदेशी
आजीवन सदस्य संख्या १११ पुगेको छ । यस अवधिमा
घेरै तर्फ देखि सदस्यता नविकरण नगराउनु भएका २०

जना सदस्य साथीहरूले सदस्यता नविकरण गराउनु
भएको छ भने १९ जना साधारण सदस्यहरूले आजीवन
सदस्यता प्राप्त गर्नु भएको छ । म बर्हाइहरूको समाज
प्रतिको वढ्दो चाखलाई कदर गर्दै हादिक धन्यवाद
ज्ञापन गर्दछु ।

अन्य कित्ताकलापको सन्दर्भमा यस समाजले बेला
बेलामा प्रवचन गोष्ठीको आयोजना गरेको थियो । सो
को विवरण समाजको न्यूज बुलेटिनमा प्रकाशित भएकै
छ । यस्तै जर्नेल पनि समय समयमै प्रकाशित भइ रहेको
कुरा जानकारी गराउँछु । हालै यस समाजले प्रकाशनमा
ल्याउन लागेको गोष्ठीको प्रोसिडिङ प्रकाशनको अन्तिम
अवस्थामा रहेको छ ।

आर्थिक पक्षमा हाल यो समाज निकै सुदृढ
भएको जानकारी समाजका कोषाध्यक्ष श्री कृष्ण प्रसाद
काफ्लेज्यूले प्रस्तुत गर्नु हुनेछ ।

अन्त्यमा म यस समाजको कार्य अवधिमा सक्रिय-
तापूर्वक आर्थिक तथा अन्य किसिमको सहयोग पुऱ्याउने
निम्नलिखित संस्थाहरूलाई हादिक धन्यवाद ज्ञापन
गर्दछु ।

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धर्मदाद

(ख) कोषाध्यक्षको आय व्ययको प्रतिवेदन

श्रीमान् अध्यक्ष महोदय तथा उपस्थित सदस्य साथीहरू,

सबै प्रथम मलाई यस नेपाल भौगमिक समाजको कोषाध्यक्ष पदमा रहि समाजको उत्तरोत्तर प्रगतिको लागि खास गरेर आर्थिक क्षेत्रमा केहि योगदान पुऱ्याउने मोला प्रदान गर्नु भएकोमा म यस समाजको सम्पूर्ण सदस्य साथीहरूलाई धन्यवाद दिन चाहन्छु ।

आज तपाईंहरूको समक्ष गत २ वर्षको कार्य कालमा (आ.व. २०४५।०४६ र आ.व. २०४६।०४७) भएको गण समाजको आर्थिक विवरण पेश गर्ने उपस्थित भएको छु । उक्त दुई वर्षको पहिलो वर्षमा श्री उपेन्द्र मान सिंहजीले समाजको कोषाध्यक्ष पदमा रहि काम गर्नु भएको र उहाँले गत वर्ष आफ्नो काम विशेषले गर्दा उक्त पदबाट राजीनामा दिनु भएकोले सो पदमा तपाईंहरूले सबै सम्पत्तिबाट मलाई कोषाध्यक्षमा मनोनयन गर्नु भएको कुरा यहाँहरू सबैलाई विदित छ ।

दिन प्रतिदिन यस समाजको आर्थिक कारोबार बढ्दै जानु र हामीहरूमा आर्थिक संचालनका नियमहरू अनुरूप विभिन्न हिसाबहरू के कस्तो तरीकाबाट राख्नु पर्छ सो को लागि के के नियम पालना गर्नु पर्छ र कस्तो क्रियाको रेकर्डहरू राख्नु पर्छ भन्ने त्यति राम्रो

ज्ञान नभएको र त्यसमा पनि एउटै कार्यकालमा (२ वर्षमा) दुई-तीन जनाबाट आफ्नै तरीका अनुसार हिसाबहरू राख्ने प्रक्रिया भए बाट हिसाबहरू राख्न केहि कठिनाई अनुभव गरेको छु । तर पनि आफ्नो बुद्धि र विवेकले भ्याएसम्म हिसाब दुखस्त राख्ने कोशिस गर्दा पक्कै पनि कतिपय त्रुटी हुन सक्ने सम्भावना भएकाले हामी समाजको गत २ वर्षमा भएको सम्पूर्ण आर्थिक कारोबारको सम्पूर्ण कामजात अडिटरलाई जिम्मा लगाई अडिटरको रिपोर्ट पनि प्राप्त भइ सकेको छ । यै कार्य कालमा भू. पू. कोषाध्यक्ष श्री कीर्ति कौरण राज भण्डारीले अधिल्लै अडिटरले अडिट गरि सकेपछि पनि केहि रकमको भ्राम्दानी खर्च राख्नु भएकाले सो भ्राम्दानी खर्चको फाइल पनि नोज अडिटरलाईनै अडिट गर्न दिई १३ भाद्र २०४५ देखि १९ आश्वीन २०४५ सम्म श्री कीर्ति कौरणले गरेको भ्राम्दानी खर्चको Balance Sheet वेग्लै र त्यस पछि २० आश्वीन २०४५ देखि २५ भाद्र २०४७ सम्मको भ्राम्दानी खर्चको वेग्लै बेल्लेस सीट अडिटरबाट प्राप्त भएको छ । हामी कार्यकालमा भएको आर्थिक कारोबारको विवरण अडिटरको प्रतिवेदनहरूबाट स्पष्ट हुने भएकोले उक्त प्रतिवेदनहरू यहाँहरू समक्ष पेश गर्दछु ।

Auditor's Report

Kha- 2/627, Bagbazar,
Kathmandu, Nepal.

The members,
Nepal Geological Society,
Kathmandu,

Gentlemen,

I have audited the attached Receipt & Payment Account for the year 13th Bhadra 2045 to 25th Bhadra 2047 and reports as follows:

1. I have got all the information and explanations which are required for the purpose of audit.
2. Proper books as required are not maintained.
3. The attached Receipt & Payment Account is drawn properly up in accordance with available records which are made available to me.
4. According to the information given to me, the attached Receipt & Payment Account prepared for the year 13th Bhadra 2045 to 25th Bhadra 2047 exhibit true and fair view.

Dev Krishna Kansakar
Auditor
Kathmandu
29th Bhadra, 2047

NEPAL GEOLOGICAL SOCIETY

Receipt & Payment Account for the year
13th Bhadra 2045 to 19th Aswin 045

Receipt	Amount	Payment	Amount
To Cash and Bank balance		By Taxi/Transportation	72.00
To Donation		By Audit Fee	500.00
To Sale of Journal		By Postage	30.00
To Membership subscription		By Remuneration	816.00
To \$ 4.00		By Observation tour at	
To Refund		earthquake Victim area	5,000.00
		By Printing of Journal	10,000.00
		By Misc. Expenses	505.00
		By Bad debt	250.00
		By Cash and Bank balance :	68,421.24
		Nabil (Saving)	4,721.51
		" (Fixed)	53,000.00
		NBL (Saving)	4,448.14
		" (Current)	465.18
		Cash in hand	5,690.41
		\$ 4.00	96.00
	85,704.24		85,704.24

Treasurer

Secretary

President

Per attached report.

Auditor

20th Awasin 2045 to 25th Bhadra 2047

Per attached report.

नवनिर्वाचित सचिवको मन्तव्य

विद्वान् सदस्य साथीहरू,

आउँदो विज्ञान दशमी पर्वको उपलक्ष्यमा शुभ कामना व्यक्त गर्दै यहाँहरू समक्ष केही शब्दहरू बोल्न चाहन्छु। यहाँ धेरै खुशी लागेको छ। यस प्रतिष्ठित समाजको लागि काम गर्ने मौका दिनु भएकोमा सम्पूर्ण सदस्य साथीहरूलाई यस नव-निर्वाचित कार्यकारी समितिको तर्फबाट हार्दिक धन्यवाद ज्ञापन गर्दछु।

नेपाल भौगमिक समाज स्थापना भएको ११ वर्ष पूरा भैसकेको छ। यो अवधि समाजको जीवनको लागि निकै छोटो अवधि हो तर एक सदस्यको जीवनको लागि चाहिँ सानो अवधि होइन। यो ११ वर्षको अवधिमा नेपाल भौगमिक समाजले कार्यान्वयन गरेको विभिन्न वैज्ञानिक क्रियाकलापले यो यस्तै धेरै वैज्ञानिक तथा प्राविधिक संस्थाहरूको तुलनामा अप्रपत्तिमा रहेकोले हामी सबैलाई खुशी लाग्नु स्वाभाविक हो। अब यसको गरिमालाई अझ उच्चतम स्तरमा पुर्‍याउन यस नवनिर्वाचित कार्यकारी समितिको कर्तव्य रहेको कुरा हामीले महशुस गरेका छौं। यसमा सम्पूर्ण सदस्य साथीहरूबाट सहयोग पाउनेछौं छौं भन्ने हाम्रो विश्वास छ।

पहिलो भाग कार्यक्रम निर्धारण गर्ने शिलशिलामा समाजको इतिहासलाई संक्षिप्त रूपमा भए पनि केलाएर

हेर्नु मनासिव देखिन्छ।

(१) आज भन्दा ११ वर्ष अघि स्थापना भएको ७० सदस्यीय समाज आज बाएर यसमा २३१ सदस्यहरू भैसकेका छन् जसमा १६४ जना आजीवन सदस्य र ६७ जना साधारण सदस्यहरू हुनुहुन्छ, जसमध्ये ३२ जनाले सदस्यता नविकरण गर्न बाँकि देखिन्छ। यस वर्ष मात्र ४६ जनाले सदस्यता हासिल गर्नु भएको कुरा पूर्व सचिव श्री रमेश कुमार शर्माजले भनी हास्य भयो। वैज्ञानिक तथा प्राविधिक साथीहरूको समाज प्रतिको यस्तो अनुरोधले हाम्रो दायित्व अझ बढाएको कुरा स्पष्ट छ। यति मात्र नभई ५३ जना विदेशी वैज्ञानिकहरूले यस समाजको आजीवन सदस्यता प्राप्त गरि सक्नु भएबाट पनि अन्तरराष्ट्रिय क्षेत्रमा यसको प्रचार पुगेको छ। उत्तर अमेरिकामा मात्र २१ जना आजीवन सदस्य छन् भने युरोपमा १५ जना र जापानमा १५ जना आजीवन सदस्यहरू छन्। १६ जना धेरै विदेशीहरू साधारण सदस्य भएतापनि उनीहरूको सदस्यता नविकरण हुन सकेको छैन।

(२) हाल सम्म यस समाज द्वारा वैज्ञानिक पत्रिका ६ भोलुम (6 Volume) मा १० प्रकाशन र समाचार पत्रिका चाहिँ ७ भोलुम (7 Volume) मा

६ वटा प्रकाशन भएका छन् । जर्नेलको १० प्रकाशन मध्ये २ वटा प्रकाशन (Special Issue) जापानी सदस्य साथीहरू द्वारा जापानमा प्रकाशित भएको कुरा सर्व विदितै छ ।

शुरूमा प्रत्येक वर्ष २ वटा पत्रिका प्रकाशन गर्ने विचार गरिएतापनि विभिन्न कठिनाईको कारणले पछि आएर वर्षको एक वैज्ञानिक पत्रिका र एक समाचार पत्रिका मात्र प्रकाशन गर्ने थालियो । जे भएतापनि परि-
माणात्मक भन्दा गुणात्मक अभिवृद्धिको खाँचो छ ।

(३) ११ वर्षको प्रवधिमा स्वदेशी तथा विदेशी वक्ताहरू द्वारा प्रवचन कार्यक्रमहरू पनि आयोजना भए । बुलेटिनहरूमा प्रकाशित तथ्याङ्क अनुसार १० जना विदेशी वक्ताहरू र २ जना मात्र नेपाली वक्ताहरूले यस समाजले आयोजना गरेको प्रवचन कार्यक्रममा भाग लिएको पाइएको छ ।

(४) त्यस्तै समाजले हाल सम्म २ जना सदस्य-
हरूलाई भारतमा तालिम कार्यक्रममा सहभागी बनाएको थियो । Wadia Institute of Himalayan Geology ले Structural Geology मा र National Geophysical Research Institute Hyderabad ले Exploration Geophysics मा आयोजना गरेको तालिममा क्रमशः श्री ऋषि राम शर्मा र श्री राजाभाई बज्जाजार्म सहभागी हुनु भएको थियो ।

यसरी समष्टी रूपमा हेर्ने हो भने हाम्रो नेपाल भौगोलिक समाजले विद्यान अन्तर्गत परिलक्षित गरि राखेका मुख्य मुख्य कामहरू यस प्रकार छन् ।

क) अन्तरराष्ट्रिय सम्बन्ध

ख) वैज्ञानिक पत्रिका तथा समाचार पत्रिकाको प्रकाशन

ग) प्रवचन कार्यक्रम र सेमिनारको आयोजना

घ) तालिममा सहभागिता

यी बाहेक गत वर्ष अगष्ट २५, १९८६ मा काठमाडौंमा आयोजना गरिएको Seminar on "Geology of Nepal Himalaya" ले यस समा-
जको प्रतिष्ठालाई उच्चतम पारेको कुरा सर्वविदितै छ ।

तर वितेका एक दशकमा सदस्यहरूबाट उठाइ-
एका निम्नलिखित केही कुराहरू चाहिँ समाधान हुन
सकेका छैनन् ।

(१) यस समाजका सदस्यहरू मध्ये श्री ५ को सरकारको निजामति सेवा अन्तरगत इन्जिनियरिङ्ग सेवा जियोलजी समूहमा रहेका सदस्यहरूको पेशागत विकासको लागि यस सेवा तथा समूहमा उप समूह गठन हुनु पर्ने भनी दुईवटा उपसमितिले प्रतिवेदन दिएतापनि यस सम्बन्धमा कार्यवाही अगाडि बढ्न नसकेको देखि-
एको छ ।

(२) समाजको लागि घर, जग्गा उपलब्ध गराउन प्रयास हुनु पर्ने भन्ने सम्बन्धमा सदस्यहरूले विचार व्यक्त गरेतापनि औपचारिक प्रयास हुन नसकेको पाइएको छ ।

(३) समाजका सदस्यहरू कार्यरत भएका कार्यालयहरू, देश तथा महादेशमा सम्पर्क बिन्दु स्थापना हुनु पर्ने माग भए पनि सो धमोजिम हुन सकेको छैन ।

(४) विद्यान अनुसार अन्त्य नियम विनियम बनाउनु पर्ने भन्ने कुराहरू भएपनि हुन नसकेको देखिन्छ ।

(५) खनिजमा आधारित उद्योगहरूमा भूगर्भ-विद्हरूको उचित प्रतिनिधित्व हुनु पर्ने कुरामा लिखित रूपमा सम्बन्धित निकायहरूमा औपचारिक कुराकानी भएको छैन । चाँडै चाँडै ।

यसरी समाजले गरि आएको प्रमुख कामहरू र सदस्यहरूको मतमोबाबतलाई हृदयङ्गम गर्दा समाजको क्रियाकलापहरूलाई बढावा बढी नै बढी गतिशीलता प्रदान गर्ने सम्पादन मण्डल बाहेक अन्य निम्नलिखित उपसमिति-हरूको गठन गरी बढी नै बढी सदस्य साथीहरूलाई समाजको कार्यमा संलग्न गराउनु पर्ने यस तथ्यनिर्वाचित का. का. स. ले महशुस गरेको छ ।

उपसमितिहरू :

१) सल्लाहकार परिषद

२) आर्थिक सहयोग संकलन उपसमिति

३) वैज्ञानिक उपसमिति

४) राष्ट्रिय / अन्तरराष्ट्रिय सम्बन्ध विकास उपसमिति

५) पेशागत विकास उपसमिति

६) नियम विनियम उपसमिति

आशा छ, यस क्रियात्मक कार्य प्रणालीले पेशागत विकास र देशको भूगर्भ विज्ञानको विकासमा कटिबद्ध रहन सक्न बल मिल्ने छ । सम्पूर्ण सदस्य साथीहरूको पूर्ण सहयोगको अपेक्षा गर्दै यो मन्तव्य यही दुग्याउँछु ।

धन्यवाद !

सेप्टेम्बर १४, १९९०

Best Wishes and Hearty Felicitations on the auspicious occasion of 41st National Democracy Day

Core Consultancy (Pvt.) Ltd.

P. O. Box 720, Kathmandu, Nepal

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- Exploration and evaluation of metallic and non-metallic minerals including gemstones
- Feasibility study and mine planning
- Petrographical mineralogical and sedimentological investigation
- Geotechnical / engineering geologic studies
- Environmental survey

(घ) छलफल

प्रस्तुत प्रतिवेदनहरू पछि केही सदस्यहरू द्वारा उठाइएका प्रश्नहरू माथि पाचौं कार्यकारिणी समितिका सदस्यहरूले जवाफ दिनु भयो र पछि केही सदस्यहरूले छलफलमा सकृपतापूर्वक भाग लिनु भई छैटौं कार्यकारिणी समितिलाई विभिन्न सुझावहरू दिनु भयो । मुख्य संशङ्कहरू यहाँ प्रस्तुत गरिएका छन् ।

१) श्री निरेन्द्र ध्वज मास्केले कोषाध्यक्ष श्री नीति किरण राज सप्रेमारीको पालामा छडिट गर्ने किन बाँकि भएको भनेर पूर्व कोषाध्यक्ष श्री कृष्ण प्रसाद काफ्ले सँग प्रश्न गर्नु हुँदा बहाना उक्त चौथो का. का. स. को कार्यकाल समाप्त हुनु भएकै कारण छडिट गराइएको र बाँकि खर्चको खर्चको लागि केही हातभरे रहेको रकमको छडिट गर्ने बाँकि भएको हो भन्नु भयो ।

२) डा. श्री विशाल नाथ उप्रेतिको देश बाहिरबाट प्राप्त ४ हजारको चेक साट्न नसकिएको बारे प्रेषकलाई खबर छ वा छैन भन्ने सोध्दाईमा कोषाध्यक्ष श्री कृष्ण प्रसाद काफ्लेले पत्र पठाइसकेको जानकारी दिनु भयो ।

३) डा. उप्रेतिले तपाईं का. का. स. लाई समाजको आर्थिक कार्यभार बढ्ने गएको सम्बन्धमा सम्बन्धित विशेषज्ञहरूलाई समावेश गराउने तथा आर्थिक नियमहरू बनाउने सल्लाह दिनु भयो ।

४) श्री कृष्ण प्रसाद काफ्लेले सम्पूर्ण सदस्यहरूको पूर्ण नामावली तयार गरी कम्प्युटर प्रिन्ट निकाल्ने सम्बन्धमा पत्र पठाउने ठेगानाहरू प्रपूर्ण भएकोले संकलन गर्नु पर्ने कुराको जानकारी दिनु भयो ।

५) श्री माधव राज पाण्डेले निर्वाचन नियमहरू विधान मंडलेख गर्नु पर्ने चेता आएको कुरा बताउनु भयो ।

६) श्री गोपाल सिंह थापाले साधारण सभाको कार्यक्रमका दिन बापिक रात्री भोजको कार्यक्रम पनि समावेश गराएर देखा हुने प्रस्ताव प्रकट गर्नु भयो । यसमा डा. विशाल नाथ उप्रेतिले सहमती प्रकट गर्नु भयो । साथै बहाना तपाईंमा एक पटक समाजका सदस्यहरूको राष्ट्रिय सम्मेलन गराएर सोही दिन रात्री भोज गराउन पनि सकिने सुझाव दिनु भयो ।

७) डा. श्री मेघ राज घिमालले सदस्यहरूले समयमै आफ्नो शुल्क बुझाएर सदस्यता नविकरण गराई कोषाध्यक्षलाई सवाउनु पर्ने विचार व्यक्त गर्नु भयो साथै हाल सम्म धेरै बचत देखि शुल्क नबुझाएमा स्वदेशी वा विदेशी सदस्यहरूलाई शुल्क बुझाउने म्याद दिने र म्याद सम्म पनि नबुझाएमा सार्वजनिक सूचनामा नाम प्रकाशन गर्ने चलन स्याउनु पर्ने सुझाव दिनु भयो ।

८) अन्तर्गत पाँचौं का. का. स. को तर्फबाट कार्यवाहक अध्यक्ष तथा सचिवले छैटौं कार्यकारिणी समिति लाई गुन कामना व्यक्त गर्दै पूर्ण सहयोग गर्ने वचन दिनु भयो ।

प्रदूषित वातावरण नियन्त्रण केही पक्षहरू

माधव राज पाण्डे*

पनुत्पादक अर्थतन्त्र र जनसंख्या वृद्धिको खिचा-तानीबाट उत्पन्न भएको जंगलको विनाश, जंगल विनाशले भूमिगत जलको पैठो, झर्ने बाढी र अन्तर्राष्ट्रिय स्तरमा मरुभूमिकरण हुने गइरहेको हिमालयको पर्यावरणको संरक्षण र सम्पुलित वातावरण कायम गर्नको लागि राष्ट्रिय र अन्तर्राष्ट्रिय स्तरमा निकै आवाज सुनिन थालिएको छ । गाउँ घरमा एकाध एकाध भूमीमा एक दुई सय वृक्षारोपणको समाचार देखि लिएर "टुन्स" हिमालय देखि मुर टागु सम्मको "प्रोफाईल" साईँ दूगिटगतः गरी क्षेत्रीय तथा अन्तर्राष्ट्रिय स्तरमा कार्यक्रम तर्जुमा गर्नु पर्ने आवश्यकतामा ध्यान आकर्षण प्रेस जगत बाट गइरहेछ । वातावरण प्रति व्यक्तिगत, सामुदायिक तथा सामूहिक रूपमा सजकता उत्पन्न हुनु पर्ने आवश्यकता माथि जोड दिन थालिएको छ । निश्चयनै यी सबै गुणलक्षणहरूको प्रादुर्भाव हो । हिमाली राज्य नेपालमा हाल जाएको राजनैतिक परिवर्तनले कुनै हदसम्म पर्यावरण प्रतिको सजकता अन्तर्भावउन सुरु गरेको भान हुन्छ । अझै पर्यावरण सजकता राजनैतिक नेताको विकासको प्रतिफलको रूपमा लिन सकिन्छ । हाल जाएको राजनै-
*सिन्धुवर सिम्बोलिजिष्ट

तिक चेतनाको विकासले महत्वपूर्ण भूमिका खेलेको छ भन्ने कुरामा धेरैको सहमति पाउन सकिन्छ । त्यस्तै गरी दूषित वातावरणको परिवर्तनमा पनि यस प्रतिको सजकताले अग्रिम भूमिका खेल्दछ ।

कुनै पनि परिवर्तन आउन समयलाई नै पर्खनु पर्ने रहेछ । चाहे त्यो राजनैतिक होस चाहे दूषित वातावरणको नै । यसमा केहि आश्चर्य छैन जिनकी चेतनाको विकासको लागि आवश्यक पर्ने समय अवधि जलमानसको संवेदनशीलतामा निर्भर गर्दछ । संवेदनशीलता भने सामाजिक, धार्मिक, पारिवारिक र व्यक्तिगत कुराहरूमा निर्भर गर्दछन् । व्यक्तिगत संवेदनशीलता नै सकेकत भई सामूहिक संवेदनशीलताको रूपमा कार्य गरि चेतना विकासको समय अवधि निर्धारण गर्ने हुन्छ । यसले यस्तो एकिकरणबाट उत्पन्न हुने विशिष्ट संवेदनशीलता नै परिवर्तनको समय अवधि निर्धारण गर्ने मुख्य सूचक मान्न सकिन्छ । प्रश्न उठ्न सक्छ के कुनै तरिकाबाट यस सूचकलाई दबाउन वा उक्ताउन सकिन्छ ? निश्चयनै सकिन्छ । वि. सं. २०३२ सालमा धेरै विशिष्ट विद्वानहरूले "नयाँ शिक्षा योजना" को विरोध गर्नुको मुख्य कारण यस योजनाले जनमानसको संवेदन-

शीलतामा प्रतिकारात्मक प्रभाव पार्ने जाने कुरामाई दृष्टिगत गर्नु भएकोले हो । परिवर्तन भने अपरिहार्य हुन्छ यसलाई रोक्न सकिदैन । धर्म, शिक्षा, दीक्षा, ज्ञान, विज्ञान यी सबैलाई "संवेदनशीलता" चिन्ने हो वा उकास्ने हो उसै गरी प्रस्तुत गर्ने सकिन्छ । परिवर्तन अपरिहार्य छ भनी जान्दा जान्दै प्रतिकारात्मक ढंगबाट यी विषयहरू प्रस्तुत गरी कोही पनि धेरै कालको लागि सफल हुन सक्दैन ।

यसरी दूषित वातावरण परिवर्तन गर्ने कुरो होस् वा सन्तुलित पर्यावरण कायम गर्ने सबभन्दा पहिले व्यक्तिगत संवेदनशीलतालाई उचास्न, उकास्न, आवश्यक पर्ने देखिन्छ । हाम्रो शिक्षा, दीक्षा, धर्मोपदेश, ज्ञानोपदेश, विज्ञान इत्यादी सबै विषयहरूमा संवेदनशीलता उकास्ने कुरा प्रतिबिम्बित हुन आवश्यक छ । व्यक्तिगत स्तरमा भिक्षा भित्रै मानिसहरू भिक्षा भित्रै विषयबाट छत्ररित हुन सक्ने हुँदा सामूहिक एकिकृत रूपमा विशिष्ट संवेदनशीलता उकास्न विभिन्न विषयको माध्यम अपनाउनु पर्ने देखिन्छ ।

दूषित वातावरण नियन्त्रण र पर्यावरण संरक्षणको भर्का महत्वपूर्ण विषय समस्याको किटान तथा समाधानको तरीकाहरूको निर्धारण हो । वातावरणको समस्या भौतिक रासायनिक र जीव विज्ञान अन्तर्गतका प्रक्रियाहरू सामूहिक रूपमा दीर्घकाल सम्म कियाशील भएबाट उत्पन्न हुन्छ । यसको असर पृथ्वी र वायुमण्डलमा अवस्थित पानी, हावा, माटो, वनस्पति जस्ता तत्वहरूमा प्रतिबिम्बित हुन्छन् । यसैले धेरै जसो समस्याहरू बहु विषयात्मक प्रक्रातिका पाइन्छन् । उच्चकोटीको प्राविधिक ज्ञान, दक्षता, अनुभव र प्रविधि बिना यस्तो समस्या सामना गर्ने गाह्रो पर्छ । समस्याको गुणा-

त्मक अध्ययन वा किटान समस्या समाधानको लागि अपर्याप्त हुन्छ । परिमाणात्मक अध्ययन अनिवार्य रूपमा हुन आवश्यक देखिन्छ । परिमाणात्मक अध्ययन बिना "इतपुट-आउटपुट" नियन्त्रण सम्भव नहुने हुँदा समय र प्राथिक दृष्टिकोणबाट समेत प्रभावकारिता हानिल गर्ने सकिदैन अर्थात् जनशक्तिबाट "हृषीका" र "कड-बाजारा" प्रवात नराई कुनै समाधानको अपेक्षा राख्नु खराबोको सिङ उमार्नु खोज्नु जस्तो हुन्छ । शिक्षाको गुणस्तर बढी गर्ने दीर्घकालिन योजना तुरुन्त जारी गरिनु पर्ने देखिन्छ ।

भर्को महत्वपूर्ण पक्ष हो संचार । वातावरण विकृतीले सुस्तसुस्त दीर्घकालिन असर पारिरहेको हुन्छ । यसबाट उत्पन्न हुने प्राकृतिक शत्रुत्वको खलवस्थाले र अन्तर्व्योपस्था खुलाइनु पर्ने सामाजिक तथा धार्मिक मूल्य साधारणतया स्थिति सजिलोसँग अग्रिम रूपमा दृष्टिगत हुदैन । भर्कोतिर धेरै जसो मानिसहरू स्वभावले अल्पकालिन स्मृतीले युक्त भएको हुने हुँदा दीर्घकालिन असर प्रति संवेदनशील हुदैनन् र यस्तो असरहरू वैज्ञानिक सोचाई बिना दृष्टिगत गर्ने पनि सकिदैन । यस्तो अवस्थामा विशेषज्ञहरूले जनप्रतिनिधि, निजामति सेवाका निर्णयकर्ता र जनतासंग प्रभावकारी ढंग सँग संचार कायम गर्नु पर्ने आवश्यकता हुन जान्छ । वैज्ञानिक तथ्यहरू जनमानस समक्ष कलात्मक ढंगबाट प्रस्तुत गर्दा प्रभावकारी हुन्छ । निर्णयकर्ता र जनप्रतिनिधिहरूलाई वचनचाउन धार्मिक आक्रोशहरू, सुचकहरू, गुलनामक असरहरूको परिमाणात्मक संकेतहरू प्रभावकारी हुन सक्छन् । जनप्रतिनिधिहरूलाई वचनचाउन सामाजिक सुचकहरूले मद्दत गर्ने सक्छन् ।



Protection from Earthquakes for an Individual'

A. BEFORE AN EARTHQUAKE

A. 1. GENERAL

Be active. Help create and raise awareness towards the hazard. Spread the message that mitigation is possible by proper application of the recent advancements in science and technology.

Don't be a fatalist. Earthquake is a natural phenomena about which our scientific knowledge is growing more and more and we now have better capabilities to protect ourselves and our communities if we use these knowledge prudently.

Urge the politicians and government authorities for the development and implementation of Hazard/Damage Red-

uction Programmes at national, regional and local levels.

Don't hesitate from participating in Damage Reduction programmes.

A. 2. AT HOME

Check your home for Earthquake hazard. Follow building code² to minimise the hazards in new construction and alteration.

Have a battery radio, flashlight, and first Aid Kit at easily accessible place. Make sure everybody knows where they are kept.

Do not forget to check the batteries, the radio from time to time.

Learn first Aid.

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1. Compiled from various sources and personal experience by : Amod M. Dikshit, senior Engineering Geologist & Geotechnical Engineer.
 2. Our country still does not have any building code so one should urge authorities to facilitate its preparation.

Don't postpone learning First Aid. It is not necessary to wait till a disaster strikes.

Know and let each of family member know the location of water shut-off valve, election main switch, the fuse box, the fire extinguisher and how to turn them OFF or ON.

Securely fasten heavy appliances to the floor and anchor furniture, such as cupboards, the wall.

Don't keep heavy objects on high shelves.

Devise an Earthquake Safety plan for your family and hold occasional house earthquake drills to provide your family members with the knowledge of how to avoid injuries and panic during an earthquake. This safety plan should spell out how the family is to reunite after an earthquake the event that anybody is separated.

Don't forget to keep immunizations up date for all members of the family.

Conduct calm family discussion about earthquakes and other possible hazards.

Do not tell frightening stories about disaster.

A. 3. AT SCHOOL

Urge your school board and teachers to

discuss earthquake safety in the class rooms and to organize programmes to prepare for future earthquakes, hold earthquake drills and training sessions to prepare the pupils to react properly when Earthquake hits.

Initiate and support school building programmes fortstrengthening and renovations of old buildings.

Urge the school authorities to arrange seminar/training programmes about earthquake and safety with the participation of the disaster managers, earthquake engineers, geologists seismologists from government agencies and universities.

Organise posters and debates on international Decade for Natural Disaster Reductions (IDNDR)

A. 4. AT WORKS

Urge the authorities to develop earthquake emergency plan.

Hold earthquake drills and training sessions occasionally to prepare the staff to react properly when earthquake occurs.

B. DURING AN EARTHQUAKE

(at HOME, WORK or PUBLIC PLACES)

Stay calm. If indoors, stay indoors; if outdoors, star outdoor.

Don't panic.

If indoors stand against a wall near to the centre of the building or stand under a doorwar. Watch for falling plasters, bricks, light fixtures, and other objects. Watch for high book-cases and shelves.

Don't use the lift. People get stranded inside the lift due to power failure due to the earthquake.

Take cover under a table or under a bed.

Don't stay near to a window or to an outside exit.

Don't go out onto a balcony. The balconies are highly vulnerable place.

If in a crowded place do not stampede the exits as many would have gone to them.

Never jump out of a window.

Don't use candles, matches or open flames.

If you are outdoors stay away in the open avoiding high buildings, walls, power poles and clear of collapsed buildings and away from overhead power lines or anything that might fall such as parapets and cornices of buildings.

Don't touch fallen power line.

If you are in a running car, stop and

remain inside until the shaking is over.

Collect and compose yourself mentally. Accept the event as a test of your tolerance, human traits and values. Observe the physical phenomena taking place around you. Subsequently you may greatly help researcher-geologists and engineers to know more about the phenomena in the country by relating them your experiences. This is indispensable for a full and scientific understanding of the earthquake and for the identification of appropriate measures for future disaster reduction.

C. AFTER AN EARTHQUAKE

Check for injuries to your family, to those around you and to others in your neighbourhood.

Don't attempt to move seriously injured persons unless they are in immediate danger of further injury.

Check for fire or fire hazards.

Don't use matches, lighters or open flame appliances unless you are sure that there exists no more dangers of fire or dangers from gas leakage.

Wear shoes in all areas near debris or broken glass.

Avoid fallen powerlines or objects touched by the fallen wires.

Don't operate electric appliances unless you are very much sure of safety against shock or fire.

Immediately clean up spilled medicines, drugs and other potential harmful materials.

Don't eat or drink anything from open containers near shattered glass. Liquids may be strained through a clear handkerchief or cloth if danger of glass contaminations exists.

Save whatever water is available inside the house as water may be scarce due to the broken water supply line. Obtain emergency water from water heaters, toilet tanks, melted ice cubes etc. if water supply line is out of order

Don't use telephones except for genuine emergency calls.

Check to see if sewage lines are intact before permitting continued flushing of toilets.

Check the kitchen and carefully plan their use so that the perishables are

used before.

Turn on your radio for damage reports and informations

Don't spread rumours. They often do great harms after disasters.

Check closets and storage shelf areas. Open closets and cupboard doors carefully and watch for objects falling shelves.

Be prepared for additional earthquake shocks called after-shocks. Although most of these are smaller than the main shock, some may be large enough to cause additional damage.

If in a mountainous country don't allow school children or other people to pass across rocky cliffs and landslide area, streams etc unless you are sure of no dangers from rock fall, landslide, dam failure etc which usually result from an earthquake.

Respond to requests for help from police, fire-brigade and other organization engaged in relief operations.



New Members of NGS during 1990

1. LM-205	Masashi Takeda	:	3-1 Hongo 7-chome, Bunkyo-ku, Tokyo 113, Japan.
2. LM-206	Dr. H. C. Einfalt	:	Friedenstr 46, 7518 Bretten, Germany
3. LM-207	B. P. Chaurasia	:	Groundwater Resources Development Board, Parwanipur, Bara.
4. M-208	Dr. G. Gabert	:	
5. M-209	R. K. Karki	:	Department of Mines & Geology, Lainchaur Ktm.
6. M-210	Pranab L. Shrestha	:	" " " " "
7. M-211	Y. P. Sharma	:	" " " " "
8. M-212	B. B. Shah	:	" " " " "
9. M-213	S. B. Ranjitkar	:	P. O. Box 2774, Lazimpat, Kathmandu.
10. M-214	Kiran Karki	:	Department of Mines & Geology, Lainchaur, Kathmandu.
11. M-215	N. R. Sthapit	:	Department of Mines & Geology, Lainchaur Kathmandu.
12. M-216	I. K. Shrestha	:	Groundwater Resources Development Board, Babarmahal, Kathmandu.
13. M-217	S. R. Maharjan	:	Department of Mines & Geology, Lainchaur, Kathmandu.
14. M-218	M. Karmacharya	:	Bhurengkhel, Chhetrapati, Kathmandu.
15. M-220	B. R. Bhattarai	:	Bhadrapur Municipality, ward 6, Jhapa.
16. M-221	M. R. Manandhar	:	Dept. of Geology, Tri-chandra Campus, Ktm.
17. M-222	B. G. Baidye	:	Dept. of Mines & Geology, Kathmandu.
18. M-223	D. K. Neupane	:	" " " "
19. M-224	U. B. Shrestha	:	" " " "

East Family Extends its Best Wishes

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21. LM-226 G. R. Maithili : GEOCE Consultants (Pvt.) Ltd., P. O. Box 4266 Kathmandu.
22. M-227 H. K. Mainali : Kha 2/738, Baneshwor, Kathmandu.
23. M-228 B. M. Lekhak : ITECO Nepal (Pvt.) Ltd., P. O. Box 4177, Ktm.
24. M-229 L. Sriranjana : Pancheswor Multipurpose Project, Ministry of Water Resources, Kathmandu.
25. LM-230 V. P. Gaihre : Ground Resources Development Board, Babar Mahal Kathmandu.
26. LM-231 A. K. Panda : Nepal Orind Magnesite, P.O. Box 1242 Kathmandu.
27. LM-232 Dr. J. A. Talent : Earth Sciences, Macquarie University NSW 2109 Australia.
28. LM-233 Dr. Ruth Mawson : Earth Sciences, Macquarie University, NSW 2109 Australia.
29. LM-234 Dr. D. Bannert : BGR, Postfach 510153, 3000 Hannover 51, Germany.
30. LM-235 R. Mandal : Nepal Orind Magnesite (P.) Ltd., P. O. Box 1242 Kathmandu.
31. LM-236 A. M. Macfarlane : Rm 54-1022, MIT Cambridge, MA 02139 USA
32. LM-237 D. K. Pradhan : Nepal Orind Magnesite (P) Ltd.
P.O. Box 1242, Kathmandu.

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Participation in Seminar/Conference/Workshop

The following members of NGS have participated in seminar/Conference/Workshop within Feb. 1990 to Jan. 1991.

Name	Topic	Country
1. Amatya K. M.	Seminar in Remote sensing	USSR
2. Duvadi A. K.	" " " "	"
3. Thapa G. S.	Seminar in Mineral Exploration Management	Germany
4. Inawali B. M.	Symposium in Geothermal Energy	USA
5. Tater J. M.	Petrad Seminar	Malaysia
6. Vaidya Y. L.	Second meeting of the Asian Network on water Lifting Devices for Irrigation	Thailand

Completion of Diploma | Training Programmes

Nepal Geological Society congratulates the following members who have recently completed Training, and Diploma courses in various countries and wishes them success in their professional.

Name	Course	Country
1. Chitrakar G. R.	Diploma in photogeology	The Netherlands
2. Ghimire J.	Training in Ground water management	USA
3. Inawali B. M.	Diploma in Geothermal Exploration	Italy
4. Karki P. B.	Training in Ground water management	USA
5. Kayastha N. B.	On the Job training in seismic Data interpretation of western Nepal	Singapore
6. Ojha T. P.	Diploma in petroleum Geology	Norway
7. Pokhrel G. S.	Training in Rock mechanics	Germany, Portugal

8. Shakya T. R.	On the Job training in seismic Data interpretation of western Nepal	Singapore
9. Tamrakar J. M.	Training in Rock mechanics	Malaysia
10. Tater P. S.	Study tour / Training of 21 key officers of ILC & ISP	Philippines
11. Thapa D. B.	Study tour of hydropower stations and underground caverns	Japan



Best Wishes

The following members of NGS have left recently for further study abroad. The Society wishes them success in their respective field of study.

Name	Course	Country
1. Amatya V. B.	M. S. in Energy	Canada
2. Bajracharya S. R.	Diploma in Geological Survey	The Netherlands
3. Dhoubdel T. P.	GSI Training	India
4. Kansakar D. R.	Diploma in Geothermal Exploration	Italy
5. Koirala A.	Diploma in Engineering Geology	The Netherlands
6. Mool P. K.	Diploma in Geomorphology	The Netherlands
7. Rai S. M.	M. S. in Petrology	France
8. Rajbhandari K. K.	Diploma in Geomorphology	The Netherlands
9. Shakya R. R.	Diploma in Mineralogy/Petrography	Germany
10. Shrestha S. D.	M. S. in Environmental Geology	Japan



Congratulations

a) On Appointments by the Interim Democratic Government of Nepal.

- To Dr. M. P. Sharma, on being appointed the chairman of the Research centre for Applied Science and Technology (RECAST) Tribhuvan University, Kathmandu on June 8, 1990.
- To Mr. S. P. Singh, on being appointed the Director General of the Department of mines and Geology, Kathmandu on November 12, 1990.
- To Mr. A. N. Bhandary, on being appointed the Advisor to the ministries of Law & Justice, Labour and social welfare as well

as Tourism, HMG, Kathmandu on November 28, 1990.

b) On completion of Ph. D.

- To Dr. Pitamber Gautam for defending his Ph. D. thesis on "paleomagnetic study of the Lesser Himalaya of Nepal" in Hokkaido University, sapporo, Japan on March, 1990.
- To Dr. Megh Raj Dhital for defending his Ph. D. thesis on "Geology and structure of the Northern Dand, Lesser Himalaya" in Hokkaido University, sapporo, Japan on August, 1990.





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- MANAGEMENT CONSULTANCIES
- SOCIO ECONOMIC STUDIES



NGS Sub-Committees

In order to further expand the professional activities of the Society the Executive Committee has re-organised the Editorial Board and has set up the following sub-committees :

- a) Advisory Board
- b) Financial Sub-Committee
- c) Scientific Sub-Committee
- d) National/International Relations Development Sub-Committee
- e) Professional Development Sub-Committee
- f) Rules and Regulations Sub-Committee
- g) NGS - IDNDR Council

EDITORIAL BOARD

The Editorial Board is responsible for collecting scientific papers, popular scientific articles, relevant news etc. and for managing the publication of Journals and News Bulletins.

Its composition is as follow:

- 1. Dr. Chandra Kanta Sharma- Chief Editor

2. Nirendra Dhoj Maskey-Deputy Chief Editor

3. Tara Prasad Adhikary- Managing Editor

4. Bharat Mani Inawali- Editor

5. Dr. Bishal Nath Upreti "

6. Govind Sharma "

7. Dr. Ramesh Man Tuladhar "

8. Ram Lochan Prasad Tandukar "

9. Vijay Bahadur Shrestha "

ADVISORY BOARD

The Advisory Board provides necessary counsel as and when required, to the Executive Committee on important matters.

The members are :

- 1. Gopal Singh Thapa
- 2. Dr. Madhav Prasad Sharma
- 3. Narendra Bahadur Kayastha
- 4. Ramesh Kumar Aryal
- 5. Sailendra Bhakta Shrestha

FINANCIAL SUB-COMMITTEE

The Financial Sub-Committee is responsible for raising funds as well as for

managing the Society's assets.

The Sub-committee members are :

1. Achuta Nanda Bhandary- Co-ordinator
2. Dhruva Prasad Madhikarmi
3. Gopal Singh Thapa
4. Krishna Murari Amatya
5. Pratap Singh Tater
6. Sunder Man Shrestha
7. Tej Man Singh

SCIENTIFIC SUB-COMMITTEE

The Scientific Sub-committee is responsible for organising lectures, workshops and seminars on geological science and related fields.

The Sub-committee members are :

1. Dr. Ramesh Man Tuladhar- Co-ordinator
2. Devi Bahadur Thapa
3. Dr. Dibya Ratna Kansakar
4. Kalyan Dev Bhattarai
5. Madhav Raj Pandey
6. Dr. Megh Raj Dhital
7. Dr. Pitamber Gautam
8. Siddhi Bahadur Ranjitkar
9. Tara Prasad Adhikari

NATIONAL/INTERNATIONAL RELATIONS DEVELOPMENT SUB-COMMITTEE

The National/International Relations Development Sub-committees maintains pro-

fessional and scientific relations between the Society and similar national and international Societies. It also assists in disseminating the information on activities of the Society to its members through National/Foreign Regional Representatives.

The Sub-committee members are :

1. Tara Prasad Adhikary- Co-ordinator
2. Amod Mani Dixit
3. Ashok Kumar Duvadi
4. Babu Raja Aryal
5. Kalyan Dev Bhattarai
6. Suresh Upreti

Foreign Regional Representatives :

1. Dr. Patrick Le Fort - Europe
2. Dr. Durga Nath Rimal- America
3. Dr. Harutaka Sakai - Japan
4. Dr. John A. Talent - Australia

National Regional Representatives :

1. Dr. Purushottam Prasad Adhikary
- Eastern Region, Biratnagar
2. Prem Bahadur Karki
- Central Region, Birgunj
3. Jitendra Ghimire
- Western Region, Bhairahawa
4. Pratap Singh Tater
- Mid-western Region, Dang
5. Madhu Sudan Hada
- Far western Region, Dhangadhi

PROFESSIONAL DEVELOPMENT

SUB-COMMITTEE

The Professional Development Sub-committee aims at fostering development of expertise in the major fields of geoscience with relevance to the country. It also attempts to help create proper and adequate positions for geoscientists in general.

The Sub-committee members are :

1. Upendra Bhakta Pradhanaga- Co-ordinator
2. Kiran Karki
3. Madhav Raj Pandey
4. Prayag Man Pradhan
5. Ram Sharma Poudel
6. Sarbagya Man Tamrakar
7. Suresh Upreti

RULES & REGULATIONS

SUB-COMMITTEE

In order to carry out the professional activities of the Society more efficiently and effectively, this Sub-committee has been formed to provide first draft of necessary rules and regulations within the Society's Constitution and submit it to the Executive Committee by May, 1991.

The Sub-committee members are :

1. Achuta Nanda Bhandary- Co-ordinator
2. Babu Raja Aryal
3. Khagendra Kafle
4. Krishna Prasad Kafle
5. Prayag Man Pradhan
6. Shardesh Raj Sharma
7. Upendra Man Singh Pradhan

NGS-IDNDR COUNCIL

THE NGS-IDNDR Council aims at adequate support to International Decade Natural Disaster Reduction-National Committee in formulating and executing the various hazard reduction national programmes as well as increasing the awareness among the Nepalese people regarding the possibilities of mitigating the hazards.

The members are :

1. Achuta Nanda Bhandari- Co-ordinator
2. Amod Mani Dixit
3. Dr. Bishal Nath Upreti
4. Devi Bahadur Thapa
5. Jeevan Lal Shrestha
6. Dr. Megh Raj Dhital
7. Dr. Pitamber Gautam
8. Pratap Singh Tater
9. Ram Lochan Prasad Tandukar
10. Vishnu Das Shrestha



Geotechnical Investigations carried out in Arun— 3 Hydroelectric Project

K.N. Kafle¹

Arun-3 hydroelectric project site is located in the Sankhuwashawa District of the Eastern Development Region. A 63 m. high weir is proposed to be constructed across the Arun River near Feksindo Dobhan. Four desanding caverns are proposed in the left abutment. The dimension of each cavern is 110m. (length) \times 28m. (height) \times 17m. (width). A 11.7Km. long headrace tunnel with a diameter of 7.5m. joins the power house cavern. The proposed dimensions for the power house cavern are 161m. (length) \times 35m. (height) \times 22m. (width). This cavern is proposed to be located in the left bank slope of Arun River at Pikhawa. The Capacity of the project is 402 MW with a head difference of about 300m.

The project site has been chosen from among thirteen different probable alternative sites which were identified during the Master

plan study of Kosi Basin along Arun Valley. The pre-feasibility study was done by Nepal Electricity Authority (NEA) in 1985. Feasibility study of the project was carried out for NEA by CKC International Company, Japan in 1987. The study was funded by a grant of Japan International Cooperation Agency (JICA). Detail design of the project was prepared by a joint venture consortium of Lahmeyer International Company (LI) and Electric Energy Company (EEC), West Germany and Electric Power Development Company (EPDC), Japan. Funding for this was made available from a grant of German Government during 1989-1991. The finalisation of detailed design, tender documents and report preparation are still going on.

Geologically, the project area is located in metamorphic terrain on the eastern limb of the Arun Anticline. Augengneiss, fine grained

1. Engineering Geologist.

gneiss and mica schist are the main rock types in the project area. The weir is to be founded on the outcrop of augen gneiss with stable rock slope in the left abutment. The right abutment foundation condition is critically weak and hence, deep foundation is to be provided. Similarly, treatment by milable grout is regarded necessary in the left bank owing to the occurrence of frequent shear zones and open cracks at the sites of the desanding caverns and other oppurtenant structures.

The headrace tunnel runs through augen gneiss and mica schist with many shear zones located mostly parallel to the foliation plane. The powerhouse site is to be located on the hard, strong and massive augen gneiss with occurrences of shear zones and open cracks. To evaluate the subsurface geology in different headwork structure sites, a total of 6000 line meter length of Seismic Survey, 1200 m. length of core drilling and about 1500 m. length of test adit excuration were Carried out. Seismic refraction survey was done in different alternative sites of headwork structures to identify the thickness of loose materials and weathered zones, as well as other geological structures.

Boreholes were drilled on both the abutments as well as at the sites of weir, desanding basins, intake structure, Headrace Tunnel, Surge tank, Powerhouse and the quarry. The

purpose of boring was to determine the rock condition at the foundation level of the different headwork sites and to analyze the stability of slopes. Lugeon tests were made in most of the holes to evaluate approximately the permeability of the rocks.

Test adits, excavated at different sites were used to understand the detail geological condition of the foundation and to perform the insite tests. Geological map of adit was prepared, rock mass classification was made and ground water discharge inside adit was measured. Schmidt Hammer tests were done to evaluate the strength of rock.

Two test chambers, 5m. \times 5m. \times 5m. and 5m. \times 5m. \times 27m. in size were excavated in the left bank and construction tunnel sites respectively. Inside the chamber, convergence measurements at two locations were made. Dilatometer tests were conducted parallel and perpendicular to the foliation planes to determine the elastic modullie of rock at both the sites. The rocks were augen gneiss and mica schist.

Overcoring test was also done at construction adit site (in mica schist) to find out the elastic properties of rock. Similarly, rock mass depormability characteristics were studied by performing flat Jack test at the powerhouse site and at the construction adit sites.

TV soundings were made in the boreholes of the right bank and inside the working chamber of left bank adit to determine the exact depths of the open cracks and shear zones.

Point load tests and other shear strength tests were performed in the laboratory selecting the test specimen from the representative core and muck samples.



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A note on Exploitation of Kharidhunga Magnesite

— R. Mandal¹

Introduction

After the discovery of Kharidhunga magnesite in 1961 by Nadgir and Sharma, of the Geological survey of India, the deposit was subjected to intensive exploration by the then Nepal Bureau of Mines (presently the Department of Mines & Geology). It was estimated to contain 180 million tonnes of magnesite and 3,00,000 tonnes of talc. Later, in 1971-1973, the government hired the services of M/S Grundstofftechnik GMBH for carrying out commercial feasibility study. The Nepal Orind Magnesite (P.) Ltd. was then registered on April 7, 1979 for exploiting the deposit and marketing it after converting into dead burnt magnesite (D. B. M.)

The Kharidhunga magnesite is located in Kharidhunga of Dolakha district of the central Development Region. It is 112 Km away from Kathmandu along the Lamosangu-Jiri Road at an elevation of 2,700 metres

above mean sea level. The D. B. M. plant of 50,000 tpa capacity and a talc grinding unit of 10,000 tpa capacity are situated at Lamosangu, 81 km. Northeast from Kathmandu along the Arniko Highway. Lamosangu and Kharidhunga are joined by a 10.30 km. long monocable ropeway with the installed capacity of 150 tph.

Brief Geology

The magnesite of kharidhunga is of crystalline, breunnerite type. It has a MgO content of 88% to 24% on dead burnt basis. The impurities associated with this magnesite are tale, siderite, dolomite, pyrite and pyrrhotite. There are two schools of thought regarding the formation of this deposit syndimentary or metamorphic replacement. Geologically, the deposit is quite disturbed with several sets of step faultings which at some blocks have increased the overburden

¹ Mining Engineer

over the deposit. The thickness of magnesite is variable from 30 m. to 100 m.

Mining Method & Beneficiation process

The kharidhunga magnesite deposit has been developed to exploit selectively by open pit mining method with a bench height of 5 m. The semi-mechanised mining has been planned in a very systematic and scientific manner to yield high production. The mined ores are, after chipping, sorting, crushing and picking, transported to Lamosangu by ropeway to convert it into dead burnt magnesite in a modern pressured shaft kiln. The talc produced by the mine, however is ground to 300 mesh at Lamosangu plant. Due consideration has been taken to protect environmental degradation and land reclamation.

Purpose of the Project

The project run by Nepal Orind Magnesite (P.) Ltd. is fully export oriented and at full designed capacity it will earn Rs. 450 million in foreign exchange per year.

It will meet about 20% of the trade deficit with India and provide employment opportunity to 1000 persons directly including both at mines and plant. At present the total employment is 300 persons. There is also a possibility of selling D. B. M. to Pakistan and Bangladesh. Talc powder are sold into domestic as well as Indian markets at various rates depending upon its brightness.

Conclusion

With the installed capacity of the D. B. M. plant (raw magnesite required 1,25,000 tonnes/year) in the country, the available high grade magnesite (25 million tonnes) shall last for two hundred years. Taking this into consideration as well as the requirement of high purity magnesia for steel making and high cost of transportation in landlocked country, strategic planning is required for beneficiation, modification in burning process and proper manpower development for best quality product and its marketability in third countries for which H. M. G. support may be helpful for expediting the project.

★★

The Status of Small Scale Mining in Nepal

— K. Karki*

Introduction

Nepal is a mountainous landlocked country a large part of which has still not been geologically explored in detail. However a number of mineral deposits have already been discovered. They are cement grade limestones, Magnesite, Talc, Lead and Zinc, Precious to semi-precious stones, Construction materials etc. These form large to small deposits.

Large to Medium Scale Mining Industries

Cement grade Limestones and magnesite form large and medium sized deposits. The country will be able to export cement to third countries if these deposits are to be brought into commercial production. Likewise there are huge deposits of boulders, dolomites, quartzites and sandstones etc. These can be used as construction materials not only in the country but also can fulfill some demand of neighbouring countries.

In Nepal, the following industries fall

in medium to large scale mining category according to their mine output (tpd) and number of people employed :

- Hetauda Cement Industry (Pvt.) Ltd.
- Himal Cement Industry (Pvt.) Ltd.
- Nepal Orind Magnesite Industry (Pvt.) Ltd.
- Ganesh Himal Lead - Zinc Industry [Nepal metal Co. (Pvt.) Ltd.]
- Godavari Marble Industry (Pvt.) Ltd.
- Udaipur Cement Industries (Pvt.) Ltd.

Small Scale Mining

It is to be noted that most of the explored deposits were not found to be economically feasible for the large scale mining operations. So small scale mining should be great importance in Nepal.

The following minerals are being extracted / explored by local people on a small to very small mining basis.

*Mining Engineer

Minerals	Deposits in Mining Phase		Deposits in Exploration phase	
	Area	No	Area	No
Copper	Wapsa, Eastern Nepal	1	Different parts of Nepal	2
Coal	Dang	2	"	16
Cement grade				
Limestone	Different parts of Nepal	2	"	11
Semi precious stones	Eastern Nepal	5	Eastern & central Nepal	22
Talc	Eastern & central Nepal	8	"	7
Construction Materials	Different parts of Nepal	-	-	-
Salt	Mustang	1	-	-

Major Problems in Small Scale Mining :

- lack of infrastructure
- difficulty to carry out geological exploration and mining works due to difficult terrain and high altitude.
- Lack of capital and technical know-how of investors.
- Lack of modern mining equipment as well as their repair and maintenance facilities. Application of primitive mining methods results in low productivity.
- Stress on production without employment of skilled labour and inadequate safety measures.
- Lack of concern for conservation and protection of the environment.
- Most of the private mine owners only want to make money and as such resort to only selective rich ore mining leaving

behind economic grades that do not give adequate profits. Also higher value commodities are mined and sold for lower value products such as using chemical grade limestone and polishable marble for road ballast. These are wasteful use of natural resources which should be discovered.

Remedy

- Mineral Policy and Mining Acts should be made according to the national requirements.
- Technical Assistance should be provided by the private mine owners at a low cost.
- Workshops and training programmes should be organised for the investors by the Government to increase technical know how as well as awareness on safety, conservation and protection of the environment etc.
- Infrastructure should be developed and loan facilities should be provided.

Tokyo Declaration for International Decade for Natural Disaster Reduction

(The Society feels happy to publish 'Tokyo Declaration for International Decade for Natural Disaster Reduction' to let our members and readers know the importance of this declaration.)

"We, the Ad Hoc International Group of Experts for the International Decade for Natural Disaster Reduction, hereby declare the following:

Throughout history, mankind has lived under the threat of natural disasters. Millions of lives have been lost in recent decades, with untold human suffering and property damage as well as setbacks to development efforts. Indeed, the situation is growing worse. Vulnerability to natural disasters is rising due to population growth, urbanisation of industry and infrastructure in disaster-prone areas. But we now have improved capacity to confront the problem. Fatalism is no longer acceptable; it is time to bring the full force of

scientific and technological advancement to reduce the human tragedy and economic loss of natural disasters.

This concept is the United Nations General Assembly decision, in its Resolution 42/169 of 11 December 1987, to designate the 1990s as an International Decade in which the world community joins to cooperate on natural disaster reduction.

The Secretary-General of the United Nations, who was asked to develop a framework to attain the objective and goals of the Decade, appointed our committee, the Ad Hoc International Group of Experts. We are 25 scientists and technical experts drawn from throughout the world and representing

the spectrum of disciplines engaged in disaster reduction. We will soon submit our report to the Secretary-General, but today we wish to call to the world's attention our common conviction that millions of lives can be saved, hundreds of millions protected from tragedy, and hundreds of billions of dollars saved as a result of the International Decade.

Since our first meeting in Geneva in July 1988, there have been floods in the Sudan and Bangladesh, hurricanes Gilbert and Juana in the Caribbean and Central America, destructive earthquakes in China, India, Nepal, and the USSR, and severe drought and locust infestations in Africa. The post-disaster response of the international community has been generous. But observing these and other tragic events has convinced us of the need for increased efforts in disaster planning, preparedness, and prevention.

We believe that the Decade is a moral imperative. It is the first coordinated effort to prevent the unnecessary loss of life from natural hazards. It also makes practical sense. The Decade is an opportunity for the world community, in a spirit of global cooperation, to use the considerable existing scientific and technical knowledge to alleviate human suffering and enhance economic security. In implementing the Decade, the vulnerability of developing countries must be of special concern.

Thus we, the Ad Hoc International Group of Experts, call on;

The people of the world, as well as their governments, to work toward greater security against natural disaster;

The governments of all countries to participate actively in the Decade by educating and training their citizens to increase awareness, by enhancing social preparedness, by integrating disaster consciousness into their development programmes, and by making available the power of science and technology to reduce disaster loss;

The United Nations, scientific and technological institutions, nongovernmental organizations, and the private sector to support international and regional cooperation on disaster-related activities and to contribute to the transfer of disaster-reduction technology, particularly in disaster-prone developing countries.

The Decade is an opportunity for action, both immediate and long-term. Specific projects can be implemented immediately to help achieve a safer world. Implementation of the Decade requires commitment of the international community to enhance the level of technical cooperation, particularly with regard to the developing countries. The Group calls for all countries to form national

committees to plan for and coordinate national efforts. It suggests that the United Nations General Assembly consider the establishment of a unique cooperative mechanism, supported by extrabudgetary resources, that brings together the diverse groups that can contribute to the Decade. It seeks the commitment of the

international community to assure the availability of resources to implement this important activity.

The Group is confident that through these actions mankind will capture the promise of enhanced security and prosperity".



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International Calender

1. 1991 March 11-15, St.Louis MO USA-2nd International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics.
2. 1991 March 19-21, Paris France - International Conference on Deep Foundations.
3. 1991 March, Mexico City, Mexico - Underground Excavation Design, a short course of Rock Mechanics.
4. 1991 April 14-18, London, UK - Tunnelling 91, the 6th International Symposium.
5. 1991 April 15-19, Shanklin, UK-International Conference on slope stability Engineering - Developments and Applications.
6. 1991 April 21-27, Cairo, Egypt - 'Hazards 91' (International Symposium on Geophysical Hazards in Developing countries and their Environmental Impact.
7. 1991 April 29-May 2, Denver, USA - 8th Thematic Conference on Geologic Remote Sensing Exploration, Engineering and Environment.
8. 1991 May 27-31, Rio de Janeiro, Brazil - 24th International Symposium on Remote Sensing of Environment.
9. 1991 October 20-25, Beijing, China - International Symposium on Geological Hazards and Prevention.
10. 1991 November 25-30, Hyderabad, India - International Seminar on Exploration Geophysics in the 1990s.
11. 1992 February 23-27, Islamabad, Pakistan - First South Asia Geological Congress - GEOSAS-I

Best Wishes

and

Hearty Felicitations

on the

Auspicious Occasion of

41st National Democracy Day.

Nepal Orind Magnesite (P.) Ltd.

(A joint venture company of HMG of Nepal & Orind Group of Companies)

Ka. - 1/134, Tripureswar

G. P. O. Box 1242, Kathmandu

Telephone : 215518, 215519,

211284, 227019

Telex : 2293 NEPMAG NP

Gram : MAGNESITE, Kathmandu

**DEDICATED TO HARNESSING THE
MINERAL WEALTH FOR CONTR-
IBUTION TO OVERALL ECONOMIC
DEVELOPMENT OF THE COUNTRY**

Obituary

- Mr. Yogendra Lal Singh, founder and lifemember of the Society died on October 24, 1990 at the age of 62. The Society lost a friend, and the country a geologist at his sad and untimely demise. Three times Chairman of the Election Sub-committee of the Society, Mr. Singh had contributed significantly to promote the professional activities of the Society. He had also played a significant role to the institutional development of the Department of Mines & Geology, where he rose to the post of Deputy Director General. He was a visiting lecturer at the Department of Geology, Tri-Chandra Campus, when he expired. The credit for the discovery of cement grade limestone at Jogimara and Chobhar goes to him.

We express our deep sympathy and condolence to the bereaved family and pray for the eternal peace of his soul.

- Mr. Bhanu Bikram Shah, member of the Society died at the age of 50. The Society lost a friend and the country - a mining Engineer at his sad and untimely demise. He was a Superintending mining engineer at the Department of Mines and Geology when he expired. He had contributed to the exploration of several limestone deposits including that of Jogimara.

We express our deep sympathy and condolence to the bereaved family and pray for the eternal peace of his soul.



A Glimpse of Groundwater Resources Development In Nepal

— Ramesh M. Tuladhar

Introduction

Groundwater resources development in Nepal is in its infancy. The advent of groundwater resources development in Nepal began in the Western part of the Terai two decades ago with a joint Groundwater Investigation Project of His Majesty's Government of Nepal and the United States Geological Survey under the USAID program. Since then there has been a rather slow but appreciable development in this sector. The credit for continuing groundwater development goes to the Groundwater Resources Development Board (GWRDB), the primary government agency responsible for activities related to groundwater resource development in Nepal. The activities of the GWRDB have been increasing since its inception and at present include hydrogeological exploration, construction of production and investigation tubewells, operation and management of large tubewell

irrigation projects, assessment and evaluation of groundwater resources and computer based basic documentation through establishment of a groundwater data bank.

Groundwater potentiality

GWRDB activities clearly indicate the magnitude of the groundwater potential in the Terai is immense. This has been confirmed by the performance of production tubewell projects during the last two decades. The presence of thick unconsolidated alluvial sediments containing a significant percentage of sand and gravel throughout the Terai is the hydrogeological source of the present and potential groundwater resource. In general, the northern border of the Terai at the base of the foothills is covered with coarse materials providing excellent phreatic aquifer conditions while towards the south finer

sediments of silt and clay overlie the coarser material. This results in artesian aquifer conditions. This natural orographic layout helps increase recharge at the base of the foothills due to about 60% more rainfall and highly permeable materials in the north. A conservative estimate of the total groundwater recharge potential of the Terai each year exceeds 4,500 million cubic meter. With this volume of groundwater, it is possible the whole Terai could be irrigated by shallow and deep tubewells.

Importance of Groundwater

Nepal, a landlocked country, with more than 90% of the population involved in agriculture can benefit tremendously from adequate irrigation. The Terai constitutes about 14% of the area of Nepal and accounts for over 90% of the cultivable land. There are two sources of water for irrigation in Nepal, surface water and groundwater. The former is prone to suffer from several technoeconomic and social hazards including cost, time, and environment. The latter is free of these constraints and has several Nepalese socioeconomic advantages. Some of the major advantages of groundwater irrigation are: (i) relatively low capital cost per unit area (ii) development and maintenance of facilities handled by farmers themselves (iii) low operation and maintenance costs (iv) cost effective investment possible on a "pay-as-you-grow"

basis due to short gestation period (v) provides an adequate and reliable water supply for multiple purposes, including drinking (vi) water is delivered at or close to the site of the well (vii) is valuable insurance against drought and / or irregular supplies from surface irrigation schemes (viii) water is silt free and chemically suitable for irrigation and household uses, (ix) conjugate use with surface water to help avoid water logging and / or possible salinity problems.

Status of Groundwater Development

Due to the mentioned advantages, demand for groundwater utilization are increasing among farmers. Besides GWRDB, agencies involved directly or indirectly in the development of the groundwater resources are : the Agriculture Development Bank of Nepal (ADB) and the Ministry of Agriculture (MOA). There are more than 27,000 shallow tubewells (STWs) in the Terai of Nepal to date and they irrigate more than 100,000 ha. Similarly, there are over 300 deep tubewells, many flowing at the surface, that irrigate nearly 20,000 ha. A majority of the STW have been obtained by using funds from individual ADB loans to farmers, the capital cost of which are at present 40% subsidized by the government. The annual rate of STW installation is estimated to be in the range of 2500-3000 which is low compared to the more than 70,000 STW's expected to be developed in the

Teraí. Realizing the individual small (poor) farmer cannot afford to install STW, the government has designed a new program known as Irrigation Line of Credit (ILC). Under this program, the government provides a subsidy of 75% of the capital cost with the remaining 25% to be borne by a defined group of farmers. About 50 tubewells have been completed under this program and several thousands are underway. In contrast to the STW, for several reasons including complexity in drilling, well development and high capital cost involved, almost all deep tubewells have been provided by the government.

Future Scope

The future prospect of the groundwater resources development may be rated as very good considering the number of installed

versus potential tubewells within the Teraí. At the present growth rate of tubewells, it will take two more decades to reach full development, however, the growth rate is expected to increase in coming years. In view of the groundwater potential and inherent advantages of its use, the groundwater resources of the Teraí may be considered "the hidden treasure of Nepal". Several problems exist, including financial, technical, and management issues such as uncontrolled placement of tubewells, inadequate coordination between agencies developing tubewells under various programs, work duplication, technical confusion and above all, heavy overhead expenses. These could produce a technical catastrophe in the future, provided necessary and timely actions are not taken for systematic and scientific development of this hidden treasure.





Best Wishes
&
Hearty Felicitations
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41st National Democracy day

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Godavari Marble Industries (P.) Ltd.
Bagbazar. Kathmandu

P. O. Box: 489

Phone: Office- 225043

Factory - 213144

Cable; GODMARBLE

TEL : 251 EMCEE
